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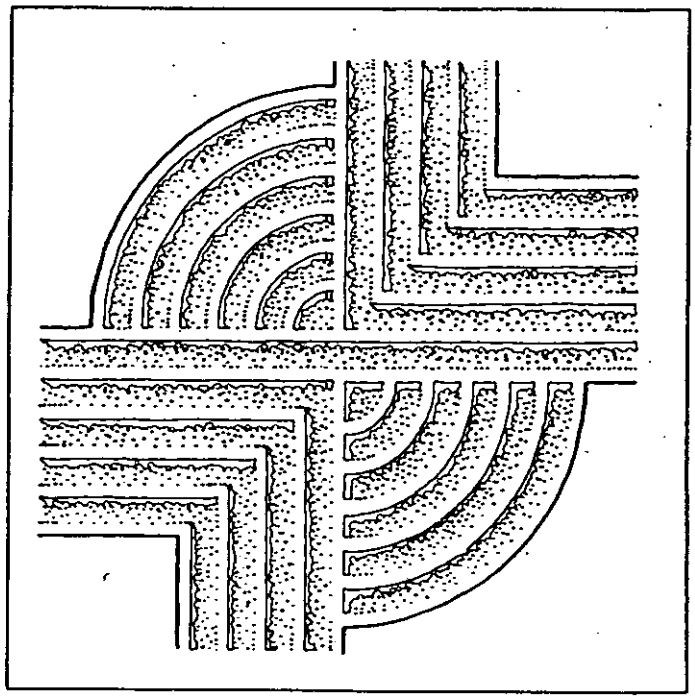

RESEARCH CONTRIBUTION 30

ETHNOBOTANICAL ANALYSIS OF SAMPLES FROM THE JOHN RUTLEDGE HOUSE, CITY OF CHARLESTON, SOUTH CAROLINA

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January 3, 1989

Introduction

These ethnobotanical samples were collected in January and February 1988 by Ms. Martha Zierden and Ms. Kimberly Grimes of The Charleston Museum, from test excavations at The John Rutledge House site in downtown Charleston, Charleston County, South Carolina. The data recovery was conducted under contract with the Historic Charleston Foundation and this ethnobotanical analysis was conducted under a consultant agreement with The Charleston Museum. While it is important to consult the primary archaeological report for details concerning this site, a brief overview will be presented, with emphasis on the site context as it may effect the botanical record.

Charleston is situated in an area of environmental diversity because of its proximity to wetlands and tidal estuaries. The vegetation, prior to the development of the town, was probably dominated by oak-hickory-pines forests (Kuchler 1964:111). After 1680, when the colonists moved from Oyster Point to the present site of Charleston, the native landscape changed dramatically. The town, intended to encompass 300 acres, was laid out on a central square plan emulating Thomas Holme's design for Philadelphia and also Robert Newcourt's 1666 plan for the rebuilding of London and the various Ulster towns of 1609-1613 built by the Irish Society. These designs are discussed by Fries (1977), but it should be noted that they are characteristically urban in both population density and non-agricultural orientation. Fries notes that these designs were "in the service of utility and private property in land, not the delight and pleasure in site and ambience" (Fries 1977:98). While little research has been conducted on either the Colonial landscape of urban Charleston, it is clear that this urban vision had major impacts on the native environment of Charleston.

In 1700 John Lawson remarked that Charleston "as very regular and fair streets, in which are good Buildings of Brick and Wood, and since my coming thence, as had great Additions of beautiful, large Brick-buildings" (Lawson 1967:8). In spite of these favorable comments, it is likely that Charleston's rapid expansion gave rise to problems identified by William Stephens of Savannah, Georgia in the 1740s: "the publick Squares, and most other Parts of the Town . . . filled with an offensive Weed, near as high as a Man's Shoulders" (quoted in Tate 1984:307). Wallace comments that Charleston's streets were "cluttered with filth" (Wallace 1951:197). Wier (1983) notes that by the end of the Colonial period firewood was becoming very rare and was being transported into Charleston from more distant locales and "the British, who occupied the city during the Revolution, even cut

down the protected trees lining nearby roads" (Weir 1983:44). A more idyllic view is offered by Rogers,

> [w]hen spring came, the fragrance of the flowers hovered sweetly in the air; indeed, the smell of flowers was scarcely absent the whole year through. . . . In one of the first issues of the Gazette in 1732, Charles Pinckney advertised garden seed from London. . . . By 1730, Mrs. Lamboll had a "handsome flower and kitchen garden upon the English plan." (Rogers 1980:83-84).

Also affecting the botany of Charleston were a number of natural disasters. Most significant during this early period were the fires of 1740 and 1778 (Zierden and Calhoun 1982:60). The November 18, 1740 fire in four hours destroyed the most valuable portions of Charleston and resulted in losses of 61,400 pounds Sterling (Wallace 1951:197). Such fires remove the native plant and allow invasion by "weedy" species as part of natural plant succession (Odum 1971:131, 242).

Thus, during the Colonial period Charleston biotic environment was largely shaped by the intentional (i.e., garden planning and deforestation) and unintentional (fires) actions of man. Both, however, created an unnatural, disturbed environment open to plants typically called "weeds," many of which are stenotrophic and thrive on enriched (or polluted) conditions (Odum 1971:113).

The John Rutledge House is an example of the lavish Charleston townhouses built during the late eighteenth century. Rutledge was an eminently successful Charleston lawyer and a governor of South Carolina. The archaeological record from this site should represent wealth and high status in Charleston society, similar to that of the Gibbes House (Zierden et al. 1987).

Archaeological investigations consist of five excavation units, both within the structure, within an associated carriage house, and in the walled yard area. Materials incorporated into this study, however, came only from Unit 1, located in the yard area adjacent to the carriage house; Unit 3, an extension of Unit 1; Unit 3, within the carriage house; and from Features 3 and 6. The units were excavated by natural zones, with some zones subdivided into arbitrary levels. Represented in this study are materials predating (Unit 1, Zone 6) and postdating (Unit 4, Zone 1) Rutledge's occupation (pre 1750 and pst 1850 respectively), although the bulk represent the Rutledge family era, about 1770 through 1820 (Unit 1, Zone and Unit 3, Zone 5). Feature 3, found in Unit 1, represents "a narrow, deep pit filled with loose, friable sand, whole clam shells, musket balls, and bottle glass" with a date in the 1770s (Martha Zierden, personal communication

1988). Feature 6 was identified within Zone 5 of Unit 3 and appears to be a "midden zone" containing "small bones, artifacts, and charcoal" which dates from the 1770s into the 1780s (Martha Zierden, personal communication 1988).

All of the samples submitted for analysis were either water floated by The Charleston Museum during the fieldwork or represent materials hand picked from 1/4-inch (0.6 centimeter) hand screening. Four of the five flotation samples consisted of approximately 10 gallons (38 liters) of soil, while the fifth sample (from Unit 1, Zone 6, Level 2) consisted of 5 gallons (19 liters) of soil. The flotation samples vary in weight from 2.87 grams to 286.74 grams, with the smallest flotation sample coming from the 5 gallon (19 liter) soil sample.

As with the previous examinations of the Aiken-Rhett and Gibbes House samples (Trinkley 1986, 1987), the major issues to be investigated involve evidence of subsistence resources, the presence of non-food plants in the assemblage, and the use of fuels in Colonial and Antebellum Charleston.

Procedures and Results

The five flotation samples were prepared in a manner similar to that described by Yarnell (1974:113-114) and were examined under low magnification (7 to 30x) to identify carbonized plant foods and food remains. Remains were identified on the basis of gross morphological features and seed identification relied on Martin and Barkley (1961), and Montgomery (1977). All float samples, as previously discussed, consisted of either 10 gallons (38 liters) or 5 gallons (19 liters) of soil. All but one of the flotation samples weighed in excess of the generally recommended 10 to 20 grams and two samples were so large (Unit 1, Zone 5, Level 2 at 286.74 grams and Feature 6 at 141.78 grams) that they were subsampled to reduce sample redundancy and analysis time. The results of the analyses are provided in Table 1.

In only two sample, Unit 1, Zone 6, Level 2 and Feature 6, does the wood charcoal account for the bulk of the material recovered. In the remaining samples the wood charcoal represents from 9% to 34% of the sample weight and the coal comprises up to 83% of the sample weight. The coal comprises an unusually large quantity of these samples and its presence is water floated materials, which are otherwise very clean, is exceedingly unusual. Small animal bone is relatively common in three samples (accounting for 3% to 4% of the samples by weight) and mortar accounts for 5% of one sample by weight. Only three samples yielded seed remains. Unit 1, Zone 5, Level 2 produced a single seed of bedstraw (Galium spp.), Unit 1, Zone 5, Level 4 yielded one chenopod seed (Chenopodium spp.) and two unidentified seeds, while a single seed of bulrush (Scirpus spp.) was found in Feature 5.

Provience	Wood Charcoal wt.	%	Uncarb. Organic wt.	%	Coal wt.	%	Bone wt.	%
PRE-RUTLEDGE ERA								
U 1, Z 6, L2	2.84	99.0	0.03	1.0				
RUTLEDGE ERA								
U 1, Z 5, L 2	23.10	34.1	0.14	0.2	40.21	59.4	2.87	4.2
U 1, Z 5, L 3	8.79	13.9	0.06	0.1	52.43	82.9	0.23	0.4
U 1, Z 5, L 4	10.47	8.8	0.11	0.1	96.66	81.2	5.50	4.6
Feature 6	22.86	96.1	0.02	0.1	0.19	0.8	0.71	3.0

shell wt.	%	mortar wt.	%	seeds wt.	%	Total Examined	Flotation Total
						2.04	2.04
		1.41	2.1	0.01	t	67.73	286.74
0.23	0.3	1.54	2.4			63.26	63.26
0.32	0.3	5.90	5.0	0.01	t	118.96	118.96
				t	t	23.78	141.78

t = <0.01 gram or 0.01%

Table 1. Analysis of flotation samples, weight in grams.

Four of the five hand picked samples produced charcoal fragments capable of identification to the genus level, using comparative samples, Panshin and de Zeeuw (1970), and Koehler (1917). The charcoal was broken in half to expose a fresh transverse surface. Quantification of the sample weights was not felt to be useful given the major concerns were habitat reconstruction and wood use; hence the specimens examined where simply identified to species and counted. The results of this analysis are shown in Table 2, which is organized by provenience.

The wood charcoal from the flotation samples is primarily oak (Quercus sp.), although a minor amount of pine (Pinus sp.) was also identified. Three of the five samples produced primarily coal. Two of the samples, from Unit 4, Zone 1, produced only noncarbonized materials. While the archaeological

Provenience	Quercus	Pinus	UID Wood	Coal	Carya
U 1, Z 5, L 3		1		10	
U 3, Z 5, L 2	1		1	9	
U 4, Z 1			1		1*
U 4, Z 4, L 2		2			
Feature 3	2			9	

* = noncarbonized pecan nutshell

Table 2. Wood species identified from hand picked samples.

remains from this zone dates to the mid-nineteenth century (Martha Zierden, personal communication 1988), the materials from this zone must be viewed with skepticism. While it is possible that the pine identified from one sample may represent heartwood, and hence have decay resistant properties, the pecan nutshell found in another sample is likely recent and intrusive.

Discussion

Trinkley and Zierden (1984) and Trinkley et al. (1985) have previously discussed the significance of ethnobotanical research at Historic period sites, as well the biases in the archaeological record which result from food preparation and refuse disposal activities. Basically, many plant foods were prepared or cooked in ways which will not provide an opportunity for their preservation in the archaeological record.

Although ethnobotanical analyses from Colonial period sites in South Carolina are uncommon, the few available comparative studies document the low incidence of carbonized plant foods. Research at the Gibbes House revealed the presence of wheat (Triticum aestivum) seeds (Trinkley 1987), while the Colonial Beef Market yielded evidence of corn (Zea mays) (Trinkley 1984). Peach pits (Prunus persica) have been recovered for Colonial period contexts at the lower status Lodge Alley site (Trinkley 1983b), at the McCrady Tavern site (Trinkley 1982), and at the First Trident Site (Trinkley 1983a).

The analysis of the Rutledge House collection has not contributed toward our understanding of Colonial foodways. The only food remains present, pecan nutshells, are noncarbonized and may represent relatively modern intrusions into the nineteenth century deposits. The absence of plant food remains may be attributable to food preparation and disposal practices inherent at historic sites, or may involve any of a number of other possibilities. One major consideration is that the current excavations represent about a 1% sample of the rear yard area (or 75 square feet in over 5600). Under these circumstances it is

possible that organic trash disposal and food preparation areas are not well represented in the sample. On the other hand, if Feature 6 represents, as is currently thought, a deep midden zone consisting of domestic refuse, it provides a likely context for floral dietary information. Yet, the flotation sample from the feature contained only a single seed.

One additional explanation for the absence of plant food remains at sites such as the Rutledge House may involve the wealth of the site's primary occupant. It seems likely that wealthy individuals would be inclined to consume more heavily and completely processed plant foods than the less wealthy inhabitants. As a consequence, the potential for recovery of plant foods would be reduced at sites such as the Rutledge House. While this trend has been observed at other sites in Charleston, such as the Aiken-Rhett and Gibbes houses, further research is clearly warranted.

The plant remains encountered, bedstraw, chenopod, and bulrush, are all suggestive of a disturbed habitat. Bedstraw (Galium spp.) is a perennial or annual herb which fruits from May through August. It is typical of clearings and roadsides, and one species may be found in wet, low areas such as ditches (Radford 1968:984). Chenopod (Chenopodium spp.), while cultivated by some prehistoric people, probably represents another "weedy" species which aggressively colonized disturbed areas around the city. It is an annual, or occasionally perennial, herb which fruits from about June until the first frost (Radford et al. 1968:418). Finally, the bulrush (Scirpus spp.) is an annual or perennial of the sedge family (Cyperaceae). The plant fruits from June through September and is found in marshes and along ditches (Radford et al. 1968:195).

Turning to the wood charcoal the most striking observation is its very low incidence in the samples from Rutledge's occupation. Wood is common only from Feature 6, interpreted as a midden zone. In addition, the woods which occur at the site exhibit exceptionally low diversity, with only oak and pine identified. While the samples are very small, oak appears to be the dominant wood.

Although Reese implies an association between the type of wood burned and wealth or status, noting that "the heavy and dense woods give the greatest heat, burn the longest, and have the densest charcoal" (Reese 1847:116), no such association has been clearly documented in the archaeological record. Hardwoods, common at the Aiken-Rhett site, were a minority at the Gibbes House (Trinkley 1986, 1987). In general, pine seems to have been common fuelwood, perhaps because of its relative abundance and ease of lighting. In addition, pine was well suited to certain cooking tasks which required a quick, hot fire (Reese 1847:116).

What appears to be more indicative of status, or at least wealth, is the presence of coal. By the nineteenth century Reese indicates that wood was being used only the poorer classes, while those of the upper and middle class used coal, whose "superiority . . . over every other kind of combustible, for domestic as well as many other purposes is now generally acknowledged" (Reese 1847:119).

The history of coal use in the South has received little attention. Reynolds (1942) indicates that the use of coal in the eighteenth century was sporadic and confined entirely to the wealthy, who used "cannel" or other imported English coal. Supposedly, it was not until the nineteenth century that coal became a significant fuel source. Although little research has been directed toward coal use in colonial Charleston, it is clear from a number of ethnobotanical studies that coal was present in quantities beginning sometime in the mid-eighteenth century. Coal has been identified from eighteenth century deposits at the lower status Lodge Alley site (Trinkley 1983b), at the posited industrial First Trident site (Trinkley 1983a), at the commercial site of the Charleston Beef Market (Trinkley 1984), and at the high status Gibbes and Aiken-Rhett houses (Trinkley 1986, 1987).

Coal use in Charleston began at least by the 1720s and is found in a range of wealthy and poor domestic, commercial, and industrial settings. In this sense its use was not much different from that in eighteenth century England where it was primarily used for heating with a firegrate in urban areas such as London. Cast iron ranges which used coal for cooking were introduced in the late eighteenth century and probably become more common in the early nineteenth century (Eveleigh 1983).

Coal has been found in very large quantities from the Rutledge House, both in the hand picked collections (where coal fragments over 1.5 inches in diameter were recovered) and in the flotation samples. The presence of such large quantities of dense, hard coal in the flotation samples cannot be explained, although it may relate to the extraordinary density of coal at the site.

In summary, the ethnobotanical data obtained from the Rutledge House collections suggest a site habitat with abundant cleared and disturbed ground capable of supporting "weedy" plants. No evidence of plan foods was obtained, possibly reflecting food preparation or disposal practices, a sampling bias, or extensive processing typical of high status sites. Surprisingly, wood charcoal is uncommon at the site. This seems to be related to the abundance of coal, which apparently replaced wood as the preferred fuel. What little wood as is present, is primarily oak. The Rutledge House ethnobotanical samples have produced the largest quantities of coal yet recovered from a Charleston site.

Future research at similar high status sites in downtown Charleston should continue to explore the place of plant remains in the site complex. As additional samples are gathered, it may become clear that the absence of plant food is related to the wealth of site inhabitants. In addition, further research could productively explore the relationship of wood and coal at high status sites. If it is possible to increase sampling at these sites, it would be productive to identify and collect flotation samples from deep midden and trash disposal areas (which are expected to offer good floral preservation) in preference to the thin sheet middens found in general excavation zones (which are expected to yield limited, and highly fragmented, floral remains).

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